ER Site No. 196: Bldg 6597 Cistern (TA-V)

ADS: 1306
Operable Unit: Tech Area III & V

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Site History

The Building 6597 Cistern is located in TA-V approximately 30 ft west of Building 6597, which housed the PROTO I facility until it was shut down in 1989. It is a concrete-lined cylinder that is 25 ft in diameter, extends from about 3 ft above ground surface to 25 ft below the ground surface (bgs), and has no concrete base (open at bottom). It was designed as a temporary storage container for tranformer oil from the PROTO I facility. It is reported that occasional, small quantities of transformer oil contaminated with water (and possibly Freon TM) were discharged into the cistern. An estimated 5 gallons of waste oil per week were produced at the PROTO I facility during the period of its operation and discharged into the cistern. Waste oil was reportedly routinely removed from the cistern by a contractor. There have been no discharges into the cistern since the PROTO I facility was closed in 1989.

The Building 6597 Cistern was identified during the initial 1987 Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) investigations of the PROTO I Facility and the 1987 Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment, but was not designated as a Solid Waste Management Unit (SWMU) or an Area of Concern separate from the PROTO I facility. In 1992, the Building 6597 Cistern was recommended for designation as an ER site and became SWMU 196.

Investigation of SWMU 196 was performed as part of the RCRA Facility Investigation (RFI) of Technical Areas III and V. The results of this investigation were reported in June 1996 in the RFI report. Investigation of the cistern revealed the absence of a concrete base, indicating that the potential for release of contaminants to the subsurface was higher that previously believed in the RFI Work Plan. For the RFI work, several phases of work were performed to determine the depth of the sludge in the bottom of the cistern and to collect subsurface samples once it was found that no concrete base existed. Three subsurface boreholes were augered in the cistern: two to a depth of approximately 13 ft below the cistern bottom and one to approximately 5 ft below the cistern bottom. Soil samples were collected from each borehole at approximately 2-ft

intervals and were submitted for on-site and off-site analysis of TPH and VOCs. In addition, a soil vapor sample was collected at the total depth of each borehole and analyzed on site for VOCs. Total petroleum hydrocarbon (TPH) levels ranged from 4,000 to 40,000 mg/kg to a depth of 13 ft beneath the cistern (38 ft bgs). The vertical extent of TPH contamination was not determined. Sampling verified that radionuclides and polychlorinated biphenyls (PCBs) were not present. Only trace levels of volatile organic compounds (VOCs) were detected in the samples.

The site was proposed for no further action (NFA) because the only contamination of concern found was transformer oil, which is considered nonhazardous. The New Mexico Environment Department (NMED) requested further characterization of the site to determine the vertical extent of contamination in the cistern. NMED issued this request in two notice of deficiencies (NODs), one in July 1997 and the other in March 1998.

Constituents of Concern

Petroleum hydrocarbons (TPH)
Metals (RCRA list)
VOCs
Semi-volatile organic compounds (SVOCs)
PCBs

Current Hazards

Petroleum hydrocarbons are found at 20 ft below ground surface (bgs) at the cistern's bottom and beyond. Low levels of VOCs and metals were detected in the same depth interval.

Current Status of Work

Additional subsurface soil sampling was performed in August 1999. Samples were sent to an off-site laboratory for VOCs, SVOCs, TPH, and metals.

Two soil borings were drilled adjacent to the cistern. One borehole was drilled vertically to 100 ft bgs and one borehole was drilled at an angle to permit sampling directly beneath the cistern. The vertical borehole was located 5 ft from the edge of the cistern. The angled borehole was drilled 90 linear feet and could not be advanced further due to limitations in the drill rig. The last sample taken in the angled borehole was at 75 linear feet, a depth of 65 bgs, nearly directly beneath the center of the cistern; it had a TPH concentration of 25,500 mg/kg. The last sample taken in the vertical borehole at a depth of 100 ft bgs had a TPH concentration of 48 mg/kg. The results were discussed with NMED and further investigation is planned to address the issue of extent of contamination.

Future Work Planned

Determination of VOC and SVOC levels has been difficult due to matrix interference from the high TPH concentrations. Cleanup procedures that can be used by the analytical laboratory to

eliminate matrix interference problems will be researched. Once an appropriate analytical cleanup method has been determined, additional subsurface soil samples will be taken to determine the extent of contamination beneath the cistern. During this work, the potential impacts to groundwater (at 480 feet bgs) will be evaluated. However, based on other sites with similar conditions, TPH contamination from this site has probably not migrated to groundwater.

Waste Volume Estimated/Generated

One 55-gallon drum of non-regulated waste was generated during the RFI investigation. The 1999 drilling operation generated approximately 7 cubic yards of TPH-contaminated soil.

Information for ER Site 196 was last updated Jan 23, 2003.